U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Euphydryas editha taylori

COMMON NAME(S): Taylor's, provincial name =Whulge (A Salish word meaning greater Puget Sound region) or Edith's Checkerspot.

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: October 2005

STATUS/ACTION:
___ Species assessment - determined we do not have sufficient information on file to support a proposal to list the species and, therefore, it was not elevated to Candidate status
___ New candidate
_X_ Continuing candidate
__ Non-petitioned
_X_ Petitioned - Date petition received: 12/11/02
__ 90-day positive - FR date: ___
__ 12-month warranted but precluded - FR date: ___
__ Did the petition request a reclassification of a listed species?
FOR PETITIONED CANDIDATE SPECIES:
a. Is listing warranted? Yes
b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes
c. If the answer to a.and b. is "yes", provide an explanation of why the action is precluded.
We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions (including candidate species with lower LPNs). During the past 12 months, almost our entire national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, meeting statutory deadlines for petition findings or listing determinations, emergency listing evaluations and determinations, and essential litigation-related, administrative, and program management tasks. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the past 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (http://endangered.fws.gov/).
NA Listing priority change
Former LP: ___
New LP: ___

Date when the species first became a Candidate: 10/30/01

NA Candidate removal: Former LPN: ___

___ A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

___ F - Range is no longer a U.S. territory.

___ M - Taxon mistakenly included in past notice of review.

___ N - Taxon may not meet the Act's definition of "species."

___ X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Insect; Nymphalidae

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Oregon, Washington, British Columbia

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Benton County, Oregon, Clallam, Pierce and Thurston Counties, Washington, British Columbia

LAND OWNERSHIP: The estimated proportion of habitat found on Federal, State, county, and private ownership is 55 percent on Department of Defense, 30 percent on WDNR lands, 5 percent on Benton County, Oregon lands, and 10 percent private lands, respectively.

LEAD REGION CONTACT: Paul Phifer (503/872-2823)

LEAD FIELD OFFICE CONTACT: Western Washington Fish and Wildlife Office, Lacey, Washington. Ted Thomas (360/753-4327)

BIOLOGICAL INFORMATION:

Species Description

Taylor's checkerspots are medium-sized, colorfully checkered butterflies with a set of reduced brushy forelegs (Pyle 2002). They are orange with black and yellowish spot bands, giving a checkered appearance. Taylor's checkerspots produce one brood per year. They overwinter (diapause) in the fourth or fifth larval instar phase and have a flight period as adults of 10 – 14 days.

Taxonomy

Taylor's chekerspot is a subspecies of Edith's checkerspot (Euphydryas editha). It is one of a small group of rare Pacific coastal subspecies, including the Bay checkerspot (E. e. bayensis) from the San Francisco Bay area, the Quino checkerspot (E. e. quino) from the San Diego region, both of which are Federally listed as endangered. Three other subspecies are known to occur in Washington, E. e. beani in the north Cascades, E. e edithana in the foothills of the Columbian Basin, and E. e colonia in the southern Cascades and northeast Olympic Peninsula.

Habitat and Life History

Taylor's checkerspots are known from open habitat dominated by grassland vegetation throughout their range. In British Columbia, Canada, Taylor's checkerspots were historically known from Vancouver Island and nearby islands, it had not been observed in British Columbia since 2000 (Vaughan and Black 2002), until its rediscovery on Denman Island, B.C. in May 2005. This subspecies inhabits glacial outwash prairies and grasslands on coastal bluffs. In Washington, Taylor's checkerspots inhabit glacial outwash prairies and balds within the south Puget Sound region and coastal grasslands of the north Olympic Peninsula (A. Potter, pers. comm. 2004). The two Oregon sites are found in the vicinity of Corvallis in the Willamette Valley (Vaughan and Black 2002).

Larval host plants include members of the figwort or snapdragon family (Scrophulariaceae), such as paintbrushes (Castilleja) and owl's clover (Orthocarpus), and native and nonnative plantains (Plantago) (Vaughan and Black 2002). Taylor's checkerspot larvae have been confirmed feeding on Plantago lanceolata and P. maritima in British Columbia (Guppy and Shepard 2001), P. lanceolata and Castilleja hispida in Washington (Char and Boersma 1995; Hays et al. 2000), and Plantago lanceolata in Oregon (Dornfeld 1980).

Historical Range/Distribution

Historically, the Taylor's checkerspot was known from more than 70 locations: 23 in British Columbia, 34 in Washington, and 13 in Oregon (The Evergreen Aurelians 1996; Shepard 2000; Vaughan and Black 2002; Ann Potter, Washington Department of Fish and Wildlife, pers. comm. 2003). Pyle (1989) reported there were fewer than 15 populations remaining. In fall 2002, only five populations were known to occur in Washington; four were located in the south Puget Sound region of Washington and one from the Willamette Valley of Oregon. Surveys in 2001 and 2002 of the three known British Columbia sites failed to locate any Taylor's checkerspots (James Miskelly, University of British Columbia, pers. comm. 2002).

From 1997 through 2000, surveys conducted by the Washington Department of Fish and Wildlife, Washington Department of Natural Resources, The Nature Conservancy of Washington, and Fort Lewis Military Reservation located this subspecies on 9 of 17 historic locales. Surveys of 15 sites in 2001 and 2002 located Taylor's checkerspots on only 4 sites in Thurston and Pierce Counties (A. Potter, pers. comm. 2002). Thirty to 40 individuals were estimated at two sites (Artillery Impact Area - Fort Lewis and North Bald, Bald Hill Natural Area Preserve (NAP)), and fewer than 10 individuals were counted on the other two (Bald Hill and South Balds of Bald Hill NAP). Approximately 40 adults were observed on the two primary balds (North and South) during surveys at Bald Hills in 2003, and early surveys in 2004 observed more than 50 individuals (D. Grossboll, pers. comm. 2004).

Several historic locations on the north Olympic Peninsula were surveyed during Spring 2003, and Taylor's checkerspot butterlies were observed at three. One location near the mouth of the Dungeness River had about 20 individuals. The other two locations were on balds, west of the Elwha River, and each of these locations had between 50 – 100 adult butterflies (A. Potter, pers. comm. 2004).

One location in Thurston County (Glacial Heritage Preserve), which had 131 adults in 1997, had no Taylor's checkerspots counted in 1999 or 2000. At a location in Pierce County (Thirteenth Division Prairie - Fort Lewis) that had over 7,000 adults in 1997, only 10 individuals were counted in 2000, and none were counted in 2001 (A. Potter, pers. comm. 2003). Six historic locales for Taylor's checkerspots were destroyed when the sites were developed (DuPont, Training Area 7S - Fort Lewis, Spanaway, Spanaway High School, Lakewood) and agricultural practices (Rock Prairie). Several historic Washington locales are quite old and have general locality names that were not precisely documented and are no longer known (e.g., Olympia 1893, Shelton 1971, Tenino 1929). Some of these site names may refer to other locales that are precisely documented.

The 13 historic Oregon locales have been surveyed regularly by local lepidopterists in Oregon (Paul Hammond, Oregon State University, pers. comm. 2002; Dave McCorkle, Western Oregon State University (ret.) pers. comm., 2002; A. Potter, pers. comm. 2002; Harold Rice, lepidopterist, pers. comm. 2002). Until recently (2003), just one site, located in Benton County, Oregon, was known to be occupied by Taylor's checkerspot butterflies.

As of fall 2005 there are now 12 known locations for Taylor's checkerspots in Washington, 2 in the Willamette Valley, Benton County, Oregon and a new discovery on Denman Island, British Columbia. The B.C. location was examined by the British Columbia Ministry of Water, Air and Land Protection to confirm the presence of Taylor's Checkerspot. Twelve individuals were observed at the site.

Current Range/Distribution

It should be noted that not all locations are monitored on an annual basis, due to constraints in funding, personnel and work priorities. As of October 2005, Taylor's checkerspot butterflies are known from a total of 15 locations. Locations are distributed in Washington (12 locations), Oregon (2) and a new location was rediscovered and confirmed in British Columbia, on Denman Island.

In the course of conducting surveys during spring 2005 for another rare butterfly found in Washington, the Island Large Marble (Euchloe ausonides insulanus), many historic locations of Taylor's checkerspot butterflies were surveyed. The flight periods of both of these butterflies overlap and both butterflies are found on grassland habitat with abundant forbs and grasses. No areas that were surveyed for both of these butterflies were occupied by Taylor's checkerspot.

Population Estimates

Information on population sizes for locations in Washington are based on the most recent survey completed for the site. The five sites on the north Olympic Peninsula were last surveyed in 2003. At three of the five locations the numbers ranged from 1 to 10 individuals. At the other two locations on the Olympic Peninsula, one had 10's of adults and the location at Eden Valley had more than 100 butterflies.

At locations in the south Puget Sound region, one site at Fort Lewis that had 10 to 50 individuals counted during previous surveys had more than 1,100 adults observed during early May surveys. These butterflies were found on an area that is frequently burned and remains in an early successional stage that is dominated by native grasses and forbs. The area where the butterflies were documented was estimated to be 100 hectares (ha) (247 acres (ac)).

In Oregon, Taylor's checkerspots are known from two locations, both in Benton County, in the Willamette Valley. Until 2004, the species was known from just one location in Oregon when a new population of Taylor's checkerspots was located in a Benton County Park. Surveys from 2005 observed 480 adults at the County Park and over 1,200 adults at the second location (Ross 2005).

The rediscovered population in British Columbia was confirmed by the invertebrate specialist for the BC Ministry of Water, Land and Air Protection and she reported that 12 adults were observed.

Of the 15 known locations for Taylor's checkerspot butterflies, four of the sites had more than 100 butterflies with the remainder of the sites having from 1 to 10's of butterflies.

THREATS:

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

Taylor's checkerspots are threatened by changes in the vegetation structure and composition of native grassland-dominated plant communities (Vaughan and Black 2002). Native grassland communities have been lost to conversion for agriculture and development for residential and commercial purposes. Threats to grassland vegetation also threaten habitat for the Taylor's checkerspot. Habitat has been degraded and encroached upon by nonnative woody shrubs, including Scot's broom (Cytisus scoparius) and several Washington State listed noxious weeds, such as leafy spurge (Euphorbia esula) and knapweed (Centaurium) (Vaughan and Black 2002).

Prairies in the southern Puget Sound region of Washington have been lost at a rate of approximately 40 ha (100 ac) per year since the 1850s due to the rapid conversion from grassland to Douglas-fir (Psuedotsuga menziesii) forest (Kruckeberg 1991). Less than 3 percent of the original estimated 60,000 ha (150,000 ac) of presettlement grasslands remains (Crawford and Hall 1997). In presettlement times, prairies were maintained by periodic fires that reduced the rate of conversion to forest by restricting the establishment of Douglas-fir along forested edges with grasslands. Fires also maintained the native grass and forb-dominated plant communities that had formed on the glacial outwash soils of the south Puget Sound region. In the Straits of San Juan, Washington, and the Georgia Straits of British Columbia, the coastal grassland communities are being encroached upon by Douglas-fir, rose (Rosa spp.) and snowberry (Symphoricarpos spp.) (Vaughan and Black 2002).

In addition to the loss of grasslands to conversion and plant succession, these communities are faced with decline and degradation of the grassland habitat that remains. As grasslands have been converted, the availability of host plants for feeding and nectaring by larvae and adults has

declined.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

Populations of Taylor's checkerspots have declined dramatically during the past decade. We know of no overutilization for commercial, recreational, or educational purpose; however, scientific studies may have negatively affected Taylor's checkerspot populations at a site on the 13th Division Prairie on Fort Lewis Military Reservation in Pierce County, Washington (Vaughan and Black 2002). Over 7,000 individuals were observed as recently as 1997, but only 10 adults were observed during surveys in 2000, and no Taylor's checkerspots were observed in 2001 or since (A. Potter, pers. comm. 2004). In the early and mid-1990s, mark and recapture studies were conducted at this location (Char and Boersma 1995). It is difficult to conclude that this factor caused the sharp decline in the population; however, mark and recapture studies of the bay Edith's checkerspot (Euphydryas editha bayensis) was considered a contributing factor in the extirpation of a population from a Stanford Preserve (McGarrahan 1997).

C. Disease or predation.

Currently, there are no known disease or predation factors affecting the subspecies.

D. The inadequacy of existing regulatory mechanisms.

Although there is no Washington State Endangered Species Act, the Washington Fish and Wildlife Commission has the authority to list species and provide protection from direct take. However, a species listed in Washington has no associated habitat protection regulation. State candidate species are under review for listing as Washington State Endangered, Threatened, or Sensitive Species.

The Taylor's checkerspot was designated a candidate species by Washington State in 1991 (A. Potter, pers. comm. 2000; Vaughan and Black 2002). However, candidate status within Washington State has no protective measures associated with it. No protection or restrictions on direct take is provided to these butterflies on any lands administered by any city, county, State or Federal agency.

E. Other natural or manmade factors affecting its continued existence.

The application of Bacillus thuringiensis var kurstaki (Btk) for control of the Asian gypsy moth (Lymantria dispar) likely contributed to the extirpation of three historic locales for the subspecies in Pierce County (Vaughan and Black 2002). Species having a single brood/year, such as the Taylor's checkerspot, are active in the spring and have caterpillars that are active during the spray application period. Spraying of Btk is known to have adverse effects to nontarget lepidopteran species (butterflies and moths). There is documentation that most lepidopterans are more susceptible to Btk than the target species (Haas and Scriber 1998) (e.g., Asian gypsy moth) and nontarget lepidopterans may remain susceptible for up to 30 days after spraying has ceased (Wagner and Miller 1995).

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

No conservation agreements have been finalized for the Taylor's checkerspot butterfly. A Candidate Conservation Agreement (CCA/CCAA) is currently being developed for several grassland associated species, including the Taylor's checkerspot. Several agencies (DOD (Army-Fort Lewis and McChord Air Force Base), WDFW, Washington Department of Natural Resources, Thurston County, Port of Olympia and TNC) are collaboratively working with the FWS to develop this agreement. A draft agreement is anticipated during FY 2006.

A small private parcel of prairie land was acquired in FY 2005 with funding from section 6 Recovery Lands Acquisition Funds. This 130 acre parcel will contribute to the conservation of prairie associated species in south Puget Sound. Taylor's checkerspot is a candidate species that will be introduced onto this parcel when the captive rearing methods have been improved and larvae are available to move onto the site. TNC will oversee management of the parcel and coordinate with FWS on activities that are planned for the parcel.

In addition, WDFW has received funding and hopes to purchase 600 acres of the West Rocky Prairie, the largest and highest quality remaining south Puget Sound prairie on private lands. WDFW is also planning to purchase an 80-acre private in-holding at the Black River-Mima Prairie Glacier Heritage Preserve. WDNR intends to expand the Mima Mounds Natural Area Preserve when they have available funding and willing sellers. TNC recently received a conservation easement donation on 613 acres of the Cavness ranch on Frost Prairie south of Tenino. Each of these parcels contributes to the conservation of prairie dependent species such as the Taylor's checkerspot butterfly.

Restoration of grasslands in the south Puget Sound region of Washington has resulted in temporary control of Scot's broom and other invasive woody plants through the use of herbicides, mowing, grazing, and fire. The Nature Conservancy, with funding from the U.S. Fish and Wildlife Service, has conducted restoration projects on grassland habitat at Fort Lewis Military Reservation, Glacial Heritage Preserve, Scatter Creek Wildlife Area, and the Mima Mounds and Rocky Prairie Natural Area Preserves.

In early 2005, several coordinating agencies (USFWS (ES and National Wildlife Refuge staff), WDFW, WDNR, Department of Defense (Army and Air Force), B.C. Ministry of Water, Land and Air staff, Xerces Society and the Nature Conservancy gathered in Olympia, Washington, for a 2-day workshop on Taylor's checkerspot. State of the knowledge information was shared by practitioners and the group developed a matrix that included several management strategies that either could be implemented, or have been implemented for the species. One piece of important experimental work that Fort Lewis has funded in cooperation with WDFW is being planned and will hopefully be implemented on the ground in spring 2006, is a captive breeding and translocation program for the Taylor's checkerspot. Another highlight of this work was a list of information and research gap needs. Key questions include: (1) the use and preference of host plants; (2) the spatial arrangement of sites and how to arrange future acquired sites to reduce risk of extirpation; and (3) how Taylor's may have shifted their larval host plant use in areas where the primary host plant (Scrophulariaceae) is not present.

SUMMARY OF THREATS

Threats include: (1) degradation and destruction of native grasslands to agriculture; (2) residential development; (3) commercial purposes;(4) encroachment by nonnative plants; (5) succession from grasslands to native shrubs and trees; and (6) lack of proper fire mangement. The application of Bacillus thuringiensis var. kurstake for Asian gypsy moth control likely contributed to extirpations of the subspecies at three locations in Pierce County, Washington. Magnitude of threats are high because of the extremely small size of remaining populations and reduction in distribution from the historical range. The size and location of the populations can shift from year to year. Threats are imminent because any of the numerous threats could occur at any time and all but a few of populations have very few individual butterflies. The ecosystem on which this subspecies depends requires annual management to maintain early successional, grassland and forb dominated habitat. We assigned the Taylor's checkerspot butterfly a listing priority number of 3.

RECOMMENDED CONSERVATION MEASURES

All current and high priority historic locations for Taylor's checkerspot butterflies should be monitored. Sites that have components of native habitat, bunchgrasses and forbs, or the nonnative larvae food plant Plantago lanceolata should be surveyed for the presence of the species. If the species was found to occupy a site, a formal survey or a complete assessment of the site should be made. Management actions that improve the amount and distribution of suitable habitat for Taylor's checkerspot butterflies are recommended. Management would include mowing (usually early fall or pre-emergence of larvae in the spring), prescribed burning of patches but never more than about ¼ of the site to conserve eggs and larvae, and judicious use of herbicides are all recommended procedures for improving habitat. The acquisition of grassland and bald habitat should be a high priority to conserve Taylor's checkerspot.

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3*
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11

		Subspecies/population	12

Rationale for listing priority number:
Magnitude: The magnitude of the threat is high because of the extremely small size of remaining populations and the reduction in distribution of the species from its former range. One episode of any of several threats could occur at any time, including a single period of severe weather at a critical life stage of the Taylor's checkerspot, and could eliminate the entire subspecies

Imminence: Any of the potential threats may occur at any time and some sites are currently threatened by conversion of grassland to Douglas-fir forest. .

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted? No. At this time (2005) emergency listing is not warranted because of the new populations discovered on the north Olympic Peninsula and rediscovery of the single population on Denman Island, British Columbia, thus broadening the distribution of the species to three general regions from northern Washington to the Willamette Valley, Oregon.

DESCRIPTION OF MONITORING
Although all the sites were not monitored during 2005, a majority were surveyed to confirm presence of the butterfly and to count individuals if the butterfly was present. In Washington, the locations of Taylor's checkerspot in south Puget Sound region were monitored. In Oregon, a total of 10 locations were monitored during the peak flight period for Taylor's checkerspot, 2 locations were found to harbor the species in Oregon. In British Columbia, the species was found on Denman Island in May 2005 during routine monitoring surveys for butterflies at their historic locales.

COORDINATION WITH STATES
In Washington, biologists working with WDFW and WDNR have been consulted with during the candidate assessment process and throughout the year on issues associated with Taylor's checkerspot butterflies. In Oregon, there has been little coordination with the State agencies, although there is coordination with the Oregon Natural Heritage Program, housed at Oregon State University.

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APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Acting _____ 11/10/05
Regional Director, Fish and Wildlife Service Date

Concur: _____ August 23, 2006
Director, Fish and Wildlife Service Date

Do not concur: _____ _____
Director, Fish and Wildlife Service Date

Date of annual review: October 2005

Conducted by: T. Thomas